

CONTENTS

Preface	ix
Section I: Large-scale structure and radiative transfer within interstellar clouds	1
The formation of giant cloud complexes B.G. Elmegreen	3
Cosmic rays and giant molecular clouds A.W. Wolfendale	15
Far infrared large scale map of the Orion region E. Caux, G. Malinie, R. Gispert, J.L. Puget, C. Ryter, N. Coron and G. Serra	25
Cool molecular clouds R.D. Davies	33
Models for hot-centred galactic clouds M. Rowan-Robinson	47
Models of externally heated clouds: an interim report D.W. Walker	69
Dust in Bok globules I.P. Williams and H. Bhatt	81
Section II: Spectroscopic observations of molecular sources	89
Airborne far-infrared and submillimeter spectroscopy D.M. Watson	91
The excitation and distribution of CO ($J = 6 \rightarrow 5$) emission in the Orion nebula D. Buhl, G. Chin, G.A. Koepf, D.D. Peck and H.R. Fetterman	111
First observations of the $J = 4 \rightarrow 3$ transition of HCO ⁺ R. Padman, P. Scott and A. Webster	123
Observations of the $J = 2 \rightarrow 1$ CO line in molecular clouds showing ammonia emission L.T. Little	127
Observations of circumstellar shells around OH/IR stars R.S. Booth, R.P. Norris and P.J. Diamond	137

A random view of Cygnus X S. Harris	145
The M(17)SW molecular source: internally or externally heated? M.P. Chown, J.E. Beckman, N.J. Cronin and G.J. White	159
Observations of rotational transitions of CH ₃ OH and NH ₂ near 1.2 mm Th. de Graauw, S. Lidholm, W. Boland, T.J. Lee and C. de Vries	167
High velocity flows and molecular jets C.J. Lada	175
Molecular clouds in the galactic nucleus R.J. Cohen	185
The distribution of carbon monoxide in spiral and irregular galaxies D.M. Elmegreen	191
Observations of far-infrared emission from late-type galaxies L.J. Rickard and P.M. Harvey	197
The distribution of carbon monoxide in three face-on galaxies L.J. Rickard and P. Palmer	199
Section III: Interstellar chemistry	201
The interaction between chemistry and astronomy H.W. Kroto	203
Problems in modelling interstellar chemistry D.A. Williams	219
Ion-grain collisions as a source for interstellar molecules T.J. Millar	227
Millimeter and submillimeter laboratory spectroscopy: recent results of astrophysical interest F.C. De Lucia and E. Herbst	233
Limits on the $ D : H $ ratio in the interstellar medium from molecular observations R.L. Frost, J.E. Beckman, G.D. Watt, G.J. White and J.P. Phillips	253
Dust in dense clouds: one stage in a cycle J.M. Greenberg	261
Section IV: Submillimetre wave instrumentation	307
Band-pass filters for submillimetre astronomy S.T. Chase and R.D. Joseph	309
The submillimeter receiver of the future P. Encrenaz	315
High frequency techniques in heterodyne astronomy Th. de Graauw	323

Observational aspects of the millimetre-wave cosmic background radiation D.H. Martin	339
Index	351